

## PATENT COOPERATION TREATY

PCT

From the INTERNATIONAL BUREAU

## NOTIFICATION OF ELECTION

(PCT Rule 61.2)

To:

Assistant Commissioner for Patents  
 United States Patent and Trademark  
 Office  
 Box PCT  
 Washington, D.C.20231  
 ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 28 August 2000 (28.08.00)
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International application No. PCT/GB99/02417
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International filing date (day/month/year) 23 July 1999 (23.07.99)
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Applicant SCHEMEL, Ray
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Applicant's or agent's file reference

PW099279

Priority date (day/month/year)

31 July 1998 (31.07.98)

1. The designated Office is hereby notified of its election made:

in the demand filed with the International Preliminary Examining Authority on:

18 February 2000 (18.02.00)

in a notice effecting later election filed with the International Bureau on:

\_\_\_\_\_

2. The election  was

was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer  Olivia RANAIVOJAONA
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Facsimile No.: (41-22) 740.14.35

Telephone No.: (41-22) 338.83.38

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference <b>PW099279</b>	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. <b>PCT/GB99/02417</b>	International filing date (day/month/year) <b>23/07/1999</b>	Priority date (day/month/year) <b>31/07/1998</b>
International Patent Classification (IPC) or national classification and IPC <b>H03F1/32</b>		
Applicant <b>SCHEMEL, Ray</b>		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 9 sheets, including this cover sheet.

This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

- I  Basis of the report
- II  Priority
- III  Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV  Lack of unity of invention
- V  Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI  Certain documents cited
- VII  Certain defects in the international application
- VIII  Certain observations on the international application

Date of submission of the demand <b>18/02/2000</b>	Date of completion of this report <b>30.10.2000</b>
Name and mailing address of the international preliminary examining authority: European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer <b>Fritzsche, H-V</b> Telephone No. +49 89 2399 2394



**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/GB99/02417

**I. Basis of the report**

1. This report has been drawn on the basis of (substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.):

**Description, pages:**

1-45 as originally filed

**Claims, No.:**

1-52 as originally filed

**Drawings, sheets:**

1/13-13/13 as originally filed

2. The amendments have resulted in the cancellation of:

the description,      pages:  
 the claims,      Nos.:  
 the drawings,      sheets:

3.  This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

4. Additional observations, if necessary:

**III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

the entire international application.  
 claims Nos. 49-52.

because:

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EXAMINATION REPORT

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the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (*specify*):

the description, claims or drawings (*indicate particular elements below*) or said claims Nos. 49-52 are so unclear that no meaningful opinion could be formed (*specify*):

see separate sheet

the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.

no international search report has been established for the said claims Nos. .

**IV. Lack of unity of invention**

1. In response to the invitation to restrict or pay additional fees the applicant has:

restricted the claims.

paid additional fees.

paid additional fees under protest.

neither restricted nor paid additional fees.

2.  This Authority found that the requirement of unity of invention is not complied and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is

complied with.

not complied with for the following reasons:

see separate sheet

4. Consequently, the following parts of the international application were the subject of international preliminary examination in establishing this report:

all parts.

the parts relating to claims Nos. .

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**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Yes: Claims 3-22,24-48
	No: Claims 1,2,23
Inventive step (IS)	Yes: Claims 10,11,12,13,35-39
	No: Claims 1-9,14-34,40-48
Industrial applicability (IA)	Yes: Claims 1-48
	No: Claims

**2. Citations and explanations**

**see separate sheet**

**VII. Certain defects in the international application**

The following defects in the form or contents of the international application have been noted:

**see separate sheet**

**VIII. Certain observations on the international application**

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

**see separate sheet**

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB99/02417

**Re Item III**

**Non-establishment of opinion with regard to novelty, inventive step and  
industrial applicability**

**Claims 49-52** contain references to the description and/or the drawings. According to Rule 6.2(a) PCT, claims should not contain such references except where absolutely necessary, which is not the case here.

According to the PCT it is not possible for the examiner to amend any part of the application.

**Re Item IV**

**Lack of unity of invention**

The separate inventions/groups of invention are:

Claims :1, 23, 17, 41: one signal chain

Claims: 10, 11 , 35, 36: two main signal chains

They are not so linked as to form a single general inventive concept (Rule 13.1 PCT) for the following reasons: The doubling of the frequency is already known.

**Re Item V**

**Reasoned statement under Article 35(2) with regard to novelty, inventive step or  
industrial applicability; citations and explanations supporting such statement**

Reference is made to the following documents:

- D1: G.R.Jessop, VHF/UHF Manual, 4 th edition, 1992, Radio Society of Great Britain, pages 5.31-5.33
- D2: Meinke, Gundlach,Taschenbuch der Hochfrequenztechnik, 5.Auflage, Springer Verlag, Berlin, Band 3, 1992, pages O7, O8, Q39,Q40

INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET

International application No. PCT/GB99/02417

1. The scope of a claim is defined by the broadest interpretation of the subject matter of the claim. A term like "combining a signal" covers all kinds of combining and is not limited to adding two signals. According to the "dictionaries" the word "neoteric" has to be interpreted as "modern". Consequently, no special technical meaning can be attributed to this term. If an "addition" should limit the scope, an "addition" should be clearly claimed. As it is stated in Article 6 PCT, the claim or claims shall define the matter for which protection is sought.

The applicant should bear in mind that the description shows embodiments which should support the claims. However the embodiments cannot limit the claims. Consequently, a feature like "adding" only shown in the description does not limit the claim. Therefore the applicant also has the broad scope of protection.

Also "doubling" as claimed in claim 1 has only the normal technical meaning of doubling. Any purpose shown in the application has no effect on the term "doubling" in the claim, since doubling can be understood without any support of the description.

The document D1 is regarded as being the closest prior art to the subject-matter of **claim 1**, and insofar as this claim can be understood (see Section VIII), this document shows the following features thereof (the references in parentheses applying to this document, see especially Fig. 67):

A method of generating a signal principally for use in relation to a nonlinear signal path, the method comprising the steps of:  
combining (phase modulator) an information-bearing signal (AF input) at a first frequency with an idle frequency (Oscillator) at a different frequency to generate a combined signal;  
substantially doubling a phase angle (Doubler) of the combined signal to produce a neoteric signal having a second phase angle;  
utilizing the second phase angle as phase modulation in the neoteric signal; and  
ensuring that an envelope of the neoteric signal is substantially constant in level (performed by the total device of Fig.67 since phase modulation is used).  
Consequently, the subject-matter of **claim 1** is not new and does not therefore meet the requirements of Article 33(2) of the PCT.

2. Additionally, it is remarked that claim 1 simply claims a frequency or phase modulation. The only difference over the generally known modulation is that the modulated frequency is doubled. This appears to be the **basic idea of all embodiments**. This could however not support any inventive step. The **doubling is generally known as improving the linearity**. For proving the general knowledge of this fact D2, page 08, chapter "FM-Erzeugung mittels Kapazitätsdioden", first 10 lines of second paragraph, is cited. This general knowledge can be combined with any other document.
- 2.1 **Claim 23** is very similar to claim 1. Consequently, the subject-matter of **claim 23** is not new and does not therefore meet the requirements of Article 33(2) of the PCT for the same reasons.
3. Basically the application claims a system where the information is included in the phase. It is generally known that the envelope can be kept substantially constant as no information is in the envelope. As stated above phase doubling improves linearity.
4. With regard to claim 17 it should be stated that the frequency converter 2 of document D2 combines two frequencies. The document D2 (pages Q39,Q40) is regarded as being the closest prior art to the subject-matter of **claim 17**, and shows the following features thereof (the references in parentheses applying to this document, see especially Fig. 28): A method of processing a received signal to recover information, the method comprising the steps of:
  - combining (2) the received signal with an idle frequency having a different frequency to the received signal to produce a first zone signal having a phase angle;
  - constraining (4) a signal envelope associated with the first zone signal to a substantially constant level;
  - substantially multiplying (5) the phase angle of the first zone signal to produce a neoteric signal; and
  - selectively filtering (9-12) the neoteric signal to recover the information.
- 4.1 In consequence, the system claimed in claim 17 differs from the system known from document D2 in that the multiplying being defined as doubling. The problem to be solved by the present invention may therefore be regarded as

choosing one value as operating point. The factor two is the simplest solution and generally known. Also the application mentions that other factors are possible. The subject-matter of **claim 17** is accordingly lacking inventive step contrary to Article 33(3), PCT.

- 4.2 Additionally it should be stated that **Claim 17** claims a generally known FM or PM receiver with intermediate frequency. In consequence, the system claimed in claim 17 differs from the generally known system in that the frequency is doubled. The problem to be solved by the present invention may therefore be regarded as amplifying the phase of the information carrying signal. This simplifies the further demodulation. The sensitivity of the demodulator can be reduced. Consequently, also on the basis of the generally known receiver, the subject-matter of **claim 17** is lacking inventive step contrary to Article 33(3), PCT.
- 4.3 **Claim 41** is very similar to claim 17. Consequently, the subject-matter of **claim 41** is accordingly lacking inventive step contrary to Article 33(3), PCT for the same reasons.
5. The terms "internal and external path" are vague. Consequently parts of the system of D1 could be defined as being an "internal and external path ". Consequently, the subject-matter of **claim 2** is not new and does not therefore meet the requirements of Article 33(2) of the PCT.

The dependent claims 3-9, 14-16, 18-22, 24-34, 40, 42-48 contain only minor features known from document D1, D2 or well known to the man skilled in the art.

The subject-matter of these claims is accordingly lacking inventive step contrary to Article 33(3), PCT.

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**Re Item VII**

**Certain defects in the international application**

**The features of the claim/s are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).** Reference signs are especially necessary since some unusual and sometimes strange terms are used.

Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the documents D1, D2 is not mentioned in the description, nor are these documents identified therein.

**Re Item VIII**

**Certain observations on the international application**

Was the reference of **claim 40 to claim 34** intended?

The independent **claims 1,10,11,17,23,35,36,41** lack conciseness. Moreover, lack of clarity of the claims as a whole arises, since the plurality of independent claims makes it difficult, if not impossible, to determine the matter for which protection is sought, and places an undue burden on others seeking to establish the extent of the protection.

Hence, the independent **claims 1,10,11,17,23,35,36,41** do not meet the requirements of **Article 6 PCT**.

## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference <b>PW099279</b>	<b>FOR FURTHER ACTION</b> <small>see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.</small>	
International application No. <b>PCT/GB 99/02417</b>	International filing date (day/month/year) <b>23/07/1999</b>	(Earliest) Priority Date (day/month/year) <b>31/07/1998</b>
Applicant <b>SCHEMEL, Ray</b>		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing:

contained in the international application in written form.

filed together with the international application in computer readable form.

furnished subsequently to this Authority in written form.

furnished subsequently to this Authority in computer readable form.

the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

2.  Certain claims were found unsearchable (See Box I).

3.  Unity of invention is lacking (see Box II).

4. With regard to the **title**,

the text is approved as submitted by the applicant.

the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

the text is approved as submitted by the applicant.

the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

as suggested by the applicant.

because the applicant failed to suggest a figure.

because this figure better characterizes the invention.

3b, 5

None of the figures.

## INTERNATIONAL SEARCH REPORT

International Application No  
PCT/GB 99/02417A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 H03F1/32

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 H03F H04L H03D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 787 126 A (SHIMOZAWA MITSUHIRO ET AL) 28 July 1998 (1998-07-28) ---	1,10,11, 23,35, 36,41
A	US 3 927 379 A (REUDINK DOUGLAS OTTO JOHN ET AL) 16 December 1975 (1975-12-16) ---	
A	BATEMAN A ET AL: "THE APPLICATION OF DIGITAL SIGNAL PROCESSING TO TRANSMITTER LINEARISATION" AREA COMMUNICATION, STOCKHOLM, JUNE 13 - 17, 1988, no. CONF. 8, 13 June 1988 (1988-06-13), pages 64-67, XP000118595 INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS cited in the application the whole document --- -/-	1,10,11, 23,35, 36,41

 Further documents are listed in the continuation of box C. Patent family members are listed in annex.

## \* Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

\*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

\*X\* document of particular relevance, the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

\*Y\* document of particular relevance the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

\*Z\* document member of the same patent family

Date of the actual completion of the international search  9 November 1999	Date of mailing of the international search report  22/11/1999
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer  Segaert, P

## INTERNATIONAL SEARCH REPORT

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## C(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A,P	R. SCHEMEL: "Generating arcsine(x) and alternative method for LINC" ELECTRONICS LETTERS, vol. 35, no. 10, 13 May 1999 (1999-05-13), pages 782-783, XP002122021 -----	

**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International Application No

PCT/GB 99/02417

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5787126 A	28-07-1998	JP 8242261 A	17-09-1996
US 3927379 A	16-12-1975	NONE	